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Janet Campbell, Editor

10-24

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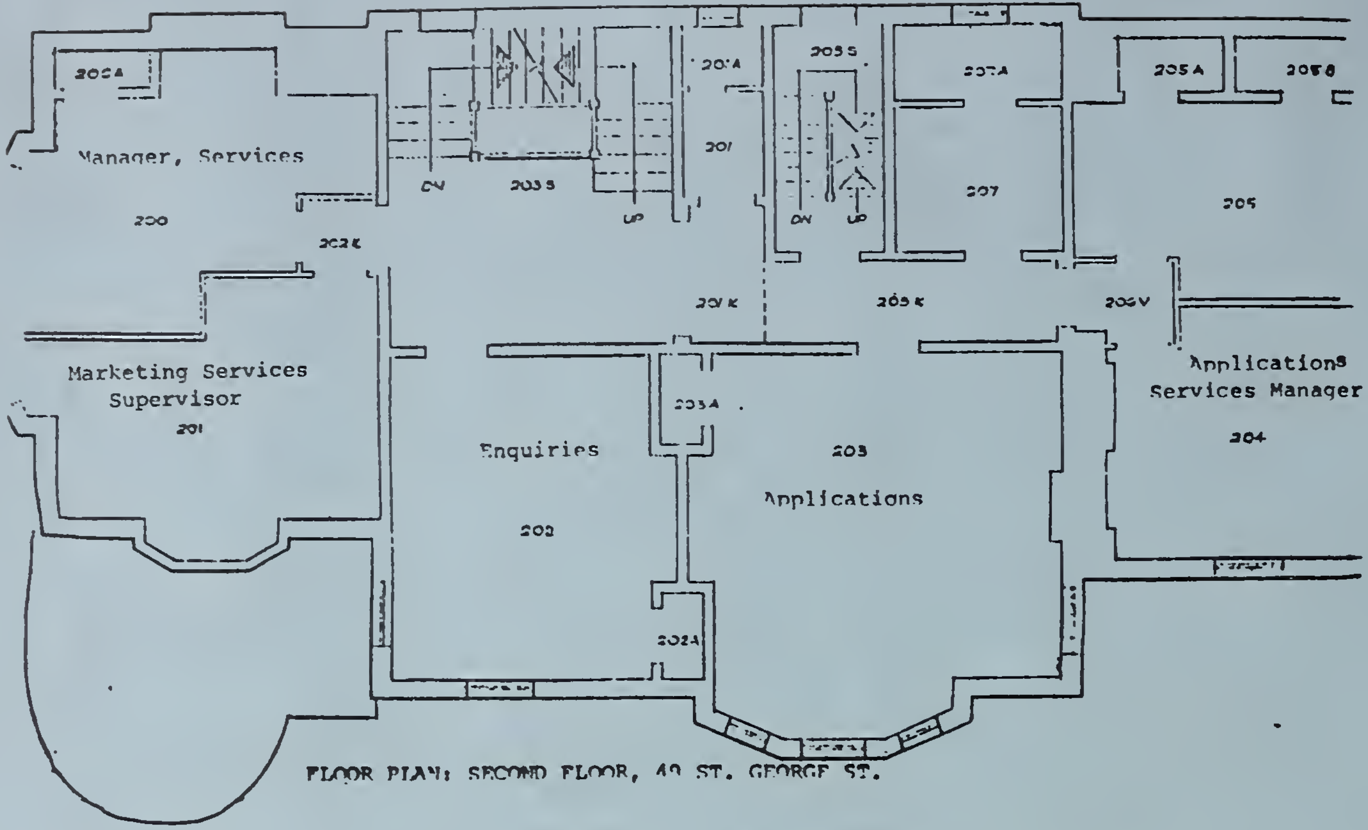
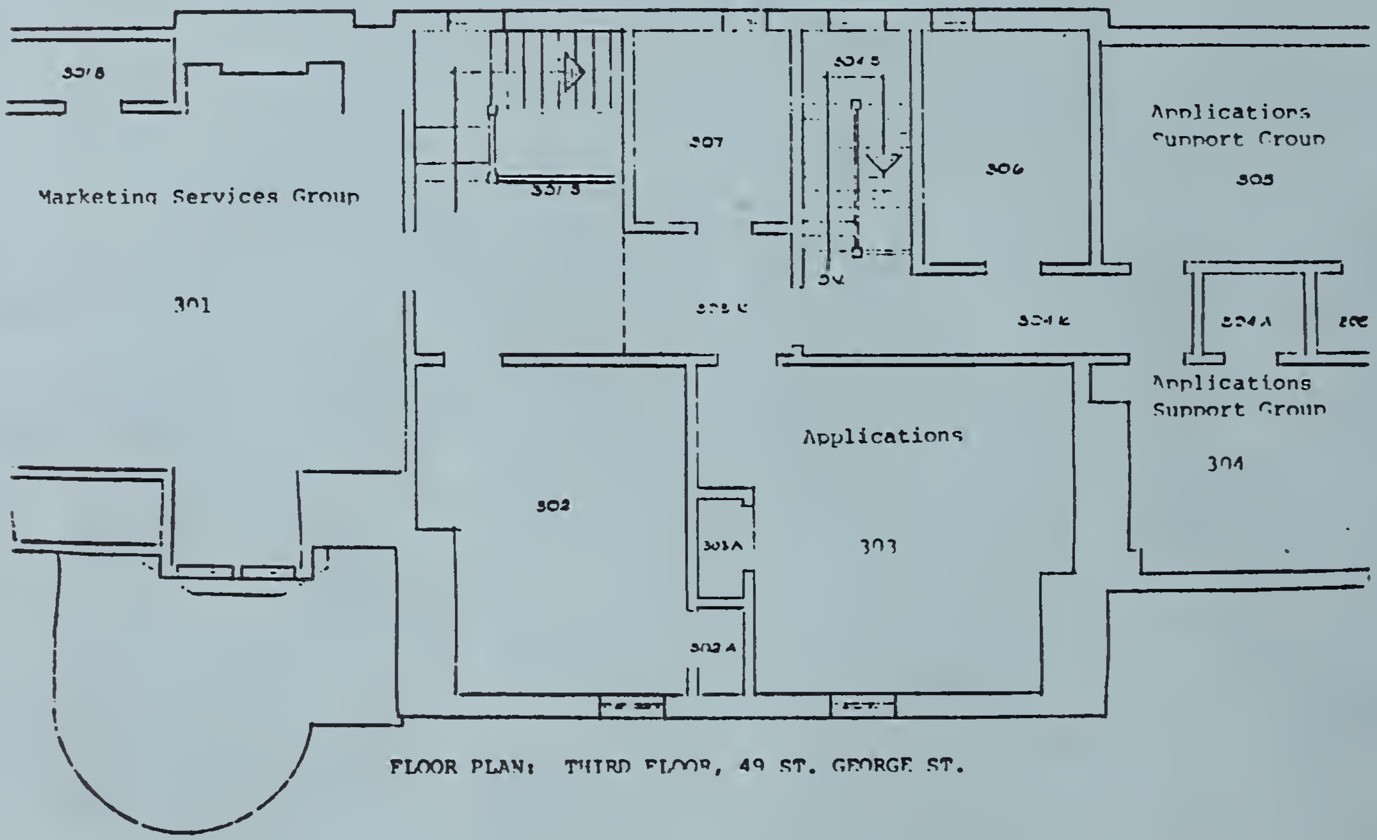


FLOOR PLAN: SECOND FLOOR, 49 ST. GEORGE ST.



FLOOR PLAN: THIRD FLOOR, 49 ST. GEORGE ST.

COMPUTERNEWS is a monthly publication produced by the University of Toronto Computer Centre. Enquiries or contributions should be directed to the Editor, Janet Campbell or the Assistant Editors, Margo Harvie and Ruth Borenstein in the Sandford Fleming Building room SF125 or (416)-928-2066. Layout and ATS typing are provided by Lynne Jenkins. Subscription changes should be directed to the Information Office, Sandford Fleming Building room SF128 or (416)-928-4990.

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UTCC LOGO

The University of Toronto Computer Centre's new official logo is reproduced below.

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computer centre

EDUCATION SCHEDULE

The following three courses will be offered by UTCC during November and December. Please note that there is no registration form to be sent in for these courses, since at the time of publication it was anticipated that registration could be held up by the postal strike.

Anyone who wishes to attend one of these courses can register in The Information Office, Sandford Fleming Building, Room 128 or call 928-4990. The user should be prepared to give his name, a Customer Account Number (CAN) which he is authorized to use and the CAN owner's name.

Statistical Package for the Social Sciences (SPSS)

Prerequisite: Background in Social Science Statistics; Must hold a CAN
Dates: Nov. 17, 19, 21
Time: 4 - 6 p.m.
Instructor: M. Domoney

For Social Sciences users who are, or will be, using the computer to process their data. SPSS is an applications-oriented programming language which contains powerful routines for the analysis of data while allowing the user to manipulate his data with simple FORTRAN-like statements.

Introduction to APL

Prerequisite: Must hold either a CAN or an APL account
Dates: Nov. 24, 26, 28
Time: 4 -6 p.m.
Maximum # of Registrants: 20
Instructor: R. Thompson

APL is a precise and powerful computational tool. This course is intended to provide the novice user with an introduction to interactive computing using APL (A Programming Language). A major part of the course will be spent in work sessions at the terminal.

Introduction to MARK IV

Prerequisite: Must hold a CAN
Dates: Dec. 1, 3, 5
Time: 4 - 6 p.m.
Instructor: J. Novak

cont'd...

EDUCATION SCHEDULE Cont'd.

MARK IV is a generalized file management system as opposed to a programming language. It is easily learned by non-programmers as well as programmers. The course will be a combination of lectures and seminars with an opportunity for the student to run MARK IV jobs. The student will:

1. Define a master file.
2. Define transactions to update the file.
3. Run a MARK IV processing job to both update the file with transactions and produce multiple reports.

The goal of this course is to provide the user with a rudimentary sampling of MARK IV so that he may determine whether he wishes to pursue the system in more depth.

USERBOOK INDEX IN PREPARATION

UTCC has received several user requests for a comprehensive index for USERBOOK, the official UTCC user reference manual. The modular design of USERBOOK represents a form of gross index to the contents and UTCC is currently preparing a Keyword index for USERBOOK Section 3 (S/370-165-II Services).

The initial index will reference only the base chapters: optional modules will be excluded. Keywords will be listed alphabetically along with the immediate context and the page number. A sample of the USERBOOK index is shown below.

The large size of the index makes printing costs prohibitive and individual copies of the index will not be distributed to subscribers. Reference copies of the index will be made available for use in the user areas i.e. Information Office SF128, Advising Office SF117 and at the various batch terminal locations. It is hoped that copies will be available at these locations before the end of the year.

Please watch future issues of COMPUTERNEWS for current information about the USERBOOK Index.

Ian Darwin

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3.4040......................TAPES TAPEXRAY TAPE 3.3TAPES TCOPY TAPE 3.3...TAPES UTDSUTIL DATASET 3.4UTILS AND 3.4UTDSUTIL VOLUME DISK
3.7500......................AN- BASED STATISTICAL SOFTWARE. HENCE, THE ...TAPES WERE CONVERTED TO A FORM COMPATIBLE WITH SPSS. DATATE
3.7500......................N ACQUIRED BY S/370 SERVICES. THE ORIGINAL ...TAPES WERE IN PACKED DECIMAL FORMAT. A FORMAT NOT DIRECTLY
3.7400......................ATA AND THE L97L SHORT FORM CENSUS SUMMARY ...TAPES. INCLUDED ARE A WIDE RANGE OF SUBPROGRAMS AND SEVERAL
3.3000......................SING FILES ON MAGNETIC TAPES SHOULD SEE 3.3...TAPES. THE 3.3DEBUG MODULE WILL HELP SOLVE PROBLEMS WHEN A
3.2040......................ASSIGNED BY THE TAPE LIBRARIAN. FOR NATIVE ...TAPES. THE INTERNAL AND EXTERNAL LABELS ARE IDENTICAL.
3.4030......................DATASET ALLOC ANALYZE TAPE DATASETS TCOPY. ...TAPEXRAY CHANGE DATASET ORGANIZATION IEBUPDTE LOGICAL RECOR
3.4040......................RGE DATASET 3.4UTILS TAPEPRT TAPE 3.3TAPES ...TAPEXRAY TAPE 3.3TAPES TCOPY TAPE 3.3TAPES UTDSUTIL DATASET
3.3040...................... OS/VS2 IS BUILT AROUND THE CONCEPT OF THE ...TASK AND DATASET AND THERE EXISTS AN ENTIRE LANGUAGE, THE J
3.4030......................UTILITY PROGRAMS THAT CAN BE USED FOR EACH ...TASK. NOTICE THAT IN SOME CASES MORE THAN ONE PROGRAM MAY B
3.4030......................OGRAM MAY BE AVAILABLE TO PERFORM THE SAME ...TASK. TABLE L. TASKS AND UTILITY PROGRAMS OPERATION OPERAND
3.3510-2....................AKE MANAGEMENT OF A SESSION A READY SIMPLE ...TASK. WHEN A ALLOC DA('USR.ABC.LOADLIB') FLE(A) POSITIONAL
3.6007......................OCESSOR (BY A PROCESS KNOWN AS ATTACHING A ...TASK). THE PROCESSOR RETURNS CONTROL TO SWITCH IF ANY OF TH
3.3040...................... WHICH IS DESIGNED TO INTERFACE THE USER'S ...TASKS AND DATASETS WITH THE OPERATING SYSTEM. THE NOVICE US
3.4030......................AILABLE TO PERFORM THE SAME TASK. TABLE L. ...TASKS AND UTILITY PROGRAMS OPERATION OPERAND UTILITY ADD CA
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3.3010......................TES CONCURRENTLY WITH OTHER USER OR SYSTEM ...TASKS IN THE COMPUTER. AN OPERATING SYSTEM IS PERMANENTLY R
3.7400......................OF COMPLETE PROGRAMS FOR THE COMMONLY USED ...TASKS OF DATA PROCESSING AND STATISTICAL ANALYSIS AS APPLIE
3.4030......................CTIONS THE FOLLOWING TABLE SHOWS A LIST OF ...TASKS THAT THE UTILITY PROGRAMS CAN BE USED TO PERFORM. THE
3.4030......................RFORM. THE LEFT-HAND COLUMN INDICATES THE ...TASKS TO BE PERFORMED. THE MIDDLE COLUMN MORE SPECIFICALLY
3.3010...................... STEPS OR TASKS. THE JOB IS THE SUM OF ITS ...TASKS. EACH SERIES OF TASKS EXECUTES CONCURRENTLY WITH OTHE
3.3010......................ES OF SUBUNITS OF WORK CALLED JOB STEPS OR ...TASKS. THE JOB IS THE SUM OF ITS TASKS. EACH SERIES OF TASK
3.4030......................IDDLE COLUMN MORE SPECIFICALLY DEFINES THE ...TASKS. THE RIGHT-HAND COLUMN SHOWS THE UTILITY PROGRAMS THA
3.3010......................VISE THIS 'MULTIPROGRAMMING' OF CONCURRENT ...TASKS. THIS SUPERVISOR IS CALLED THE IBM OPERATING SYSTEM O
3.3030......................RPOSE IS TO FACILITATE THE FOLLOWING THREE ...TASKS: HOUSTON AUTOMATIC SPOOLING PROGRAM AND ITS MAIN PURP
3.3030......................RPOSE IS TO FACILITATE THE FOLLOWING THREE ...TASKS: L. THE READING OF CARDS OR ANY INPUT DATASETS INTO T
3.3010......................MULTIPROGRAMMING WITH A VARIABLE NUMBER OF ...TASKS") WAS IN USE. VS2 PROVIDES MANY ADVANTAGES OVER THE O
3.6002...................... CB PL/C / PB PLUTO / SB SIMON / NB SNAP / ...TB SPITBOL / KB SP/K / QB SPSSQ / RB UTILITY / BB WATBOL /
3.6910......................ED SET OF SUBSETS OF THE PL/I LANGUAGE FOR ...TEACHING INTRODUCTORY COMPUTER PROGRAMMING. DEVELOPER: COMP
3.6000......................R SCIENCE AT THE UNIVERSITY OF TORONTO FOR ...TEACHING PURPOSES. SNAP. A COMPUTING PACKAGE DESIGNED TO DO
3.6005......................ER AND APPEARS AT THE BACK OF THE PRINTER. ...TEAR IT OFF. 4. CONTINUE FOLLOWING THE PATH AROUND THE PRIN
3.5000......................USERS REQUIRING INDEPTH INFORMATION ON THE ...TECHNICAL ASPECTS OF LANGUAGES AND THEIR PROCESSORS. 3.5010
3.1070-2....................NGE APPOINTMENTS WITH OTHER SUPERVISORY OR ...TECHNICAL PERSONNEL WHO CAN.
3.6000......................L ANALYSIS USING BOTH CLASSICAL AND MODERN ...TECHNIQUES. DEVELOPED BY THE DEPARTMENT OF STATISTICS. PRIN
3.6920......................L ANALYSIS USING BOTH CLASSICAL AND MODERN ...TECHNIQUES. SNAP HAS FACILITIES FOR EVALUATING A NUMBER OF
3.7200......................AND ARE MAINTAINED AT THE CURRENT LEVEL OF ...TECHNOLOGY IN NUMERICAL COMPUTATION. MOST OF THE SUBPROGRAM
3.5100......................LABORATORIES AND THE ILLINOIS INSTITUTE OF ...TECHNOLOGY RESPECTIVELY. UNLIKE SNOBOL WHICH IS AN INTERPRE
3.1040......................PG 2B IBM SPITBOL 2A ILLINOIS INSTITUTE OF ...TECHNOLOGY SIMON/SAP 2A DCS, U OF T SORT/MERGE 2A IBM STATI
3.6500......................D T AL. E DEVELOPER: ILLINOIS INSTITUTE OF ...TECHNOLOGY. PUBLICATIONS: L. 3.6HSSPIT UNIVERSITY OF TORONT
3.6000-2....................GE. DEVELOPED AT THE ILLINOIS INSTITUTE OF ...TECHNOLOGY. WATBOL: A FAST ANS COBOL COMPILER DEVELOPED BY
3.4910...................... THE COMPUTER USER WOULD FIND DIFFICULT OR ...TEDIOUS TO PERFORM IN A HIGH-LEVEL LANGUAGE. THESE ROUTINES
3.5100......................Y ARE SNOBOL AND SPITBOL DEVELOPED BY BELL ...TELEPHONE LABORATORIES AND THE ILLINOIS INSTITUTE OF TECHNO
3.5100......................MING LANGUAGE DEVELOPED ORIGINALLY BY BELL ...TELEPHONE LABORATORIES. IT IS A USEFUL TOOL IN SUCH AREAS A
3.1010-2....................TYPEWRITER TERMINALS USING COMMON- CARRIER ...TELEPHONE LINES. MANY TYPES OF TERMINALS CAN ACCESS THIS
3.6006-2....................OPTION SEE BELOW. PHONE=' ' TO SPECIFY THE ...TELEPHONE NUMBER AT WHICH THE PHONE=STRING USER MAY BE CONT
3.3.........................ACCOUNTING 3.35L5 TSO TERMINAL SUPPORT AND ...TELEPHONE NUMBERS
3.1070......................SOME OF THE MORE COMMONLY USED FACILITIES. ...TELEPHONE NUMBERS AND LOCATIONS L. GENERAL TELEPHONE NUMBER
3.1070......................TELEPHONE NUMBERS AND LOCATIONS L. GENERAL ...TELEPHONE NUMBERS SANDFORD FLEMING TERMINAL 928-7373 NEW PH
3.3515......................E NEW PAGE 3.3515 TSO TERMINAL SUPPORT AND ...TELEPHONE NUMBERS TELEPHONE NUMBERS: FOR 2741 TERMINALS 928
3.3515......................TSO TERMINAL SUPPORT AND TELEPHONE NUMBERS ...TELEPHONE NUMBERS: FOR 274I TERMINALS 928-7303 L5 CPS FOR T
3.3515......................RMINALS SUPPORTED: IBM 2741 TERMINALS. ANY ...TELETYPE (TTY) OR AND TTY-COMPATIBLE TERMINAL. USERS SHOULD
3.1020......................BOOK. HOWEVER IBM 274L TERMINALS AND ASR33 ...TELETYPE TERMINALS ARE NORMALLY USED. USERS ARE INVITED TO
3.8700......................S HOW TO PRODUCE A COPY OF THE OUTPUT OF A ...TELETYPE. SPECIAL TAPES (E.G. OBJECT OR LOAD TAPES FOR A CO
3.8700......................OR LOAD TAPES FOR A COMPUTER ATTACHED TO A ...TELETYPE) CANNOT BE HANDLED. THE USER WHO WISHES TO CONVERT
3.8700...................... OR PUNCH (ASCII) PAPER TAPES PRODUCED ON ...TELETYPES (ASR/KSR 33/35 OR EQUIVALENT) WILL ALSO REQUIRE T
3.5090......................BRARY USERID.EXAMPLE.LOAD WITH MEMBER NAME ...TEMPNAME. 3. FOLLOW UP THE OPTIONAL USERBOOK MODULE 3.5LINK
3.2057......................B REQUIRING THAT TAPE). TAPES MAY BE MOVED ...TEMPORARILY FROM ONE COMPUTER ROOM LIBRARY TO ANOTHER BY AR
3.2060......................B-CATEGORIES: A. WORK: THESE DISKS PROVIDE ...TEMPORARY 'SCRATCH' WORK SPACE FOR USERS' JOBS. THE DATASET
3.1040-2....................W PAGE COMPUTER CENTRE NEW PAGE IMMEDIATE, ...TEMPORARY NOTIFICATION OF USERS USERS ARE NOTIFIED OF SPECI
3.2207......................NCOUNTERED PROBLEMS FOR WHICH PERMANENT OR ...TEMPORARY SOLUTIONS HAD BEEN PREVIOUSLY PUBLISHED BY THE CO
3.6018......................IMUM NUMBER OF EXECUTION LINES IN UNITS OF ...TEN LINES AND MUST BE TWO DIGITS P=P WHERE P IS THE MAXIMUM
3.6205......................RE N IS THE MAXIMUM LINE LIMIT IN UNITS OF ...TEN LINES AND MUST BE TWO DIGITS P=P WHERE P IS THE PAGE LI
3.5100......................EXECUTABLE MACHINE CODE. AND IS ALSO UP TO ...TEN TIMES FASTER THAN SNOBOL. 2. ACCESS METHOD SNOBOL AND S
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PERSONNEL CHANGES

Because this article did not appear in last month's issue of COMPUTERNEWS, this month's column will cover October and November personnel changes.

Farewell and best wishes are extended to Ruth Greer, Don Brady, Gerrard Milandre, Dave Rauch, Edith Kilany and Vaughan Lawrason. Joyce Walton is only temporarily 'out of sight' as she is taking a leave of absence and will return in December. Good luck to you all in your endeavours.

On the arrival side, joining the Centre are Giora Leb and Bill Foster. Giora has just arrived in Canada from Haifa, Israel, where he was a systems programmer for Technion, Israel Institute of Technology. At the Centre, he is a programmer in the systems area. Our other newcomer, Bill, was previously employed with General Motors and is our new Marketing Representative in the Marketing area. On behalf of the Centre, I hope you both enjoy working with us and will derive much satisfaction from your new duties and responsibilities. Welcome aboard!

Trudy Holland

RECENT ACQUISITIONS IN THE DEPARTMENT OF COMPUTER SCIENCE LIBRARY

Bauer, F.L., et al.
Compiler Construction: An Advanced Course.
Berlin, Springer-Verlag, 1974

Bell, A.G.
Games Playing with Computers.
London, Allen and Unwin, 1972.

Hellerman, H.; Conroy, T.F.
Computer System Performance.
New York, McGraw-Hill, 1975.

Hume, J.N.P.; Holt, R.C.
Structured Programming Using PL/1 and SP/k.
Reston, Va., Reston Pub. Co., 1975.

IBM Scientific Symposium of Software Engineering Education,
Montebello, Que., May 1975.
Proceedings, ed. by D.A. Oakes et al.

International Joint Conference on Artificial Intelligence,
Tbilisi, U.S.S.R., Sept. 1975.
Advance paper of the Conference.

Lorin, H.
Sorting and Sort Systems.
Reading, Mass., Addison-Wesley, 1975.

Martin, J.T.
Computer Data-base Organization.
Englewood Cliffs, N.J., Prentice-Hall, 1975.

Scott, M.R.
Invariant Imbedding and Its Applications to Ordinary Differential Equations.
Reading, Mass., Addison-Wesley, 1973.

Stone, H.S.
Introduction to Computer Architecture.
Chicago, Science Research Assoc., 1975.

Stroud, A.H.
Numerical Quadrature and Solution of Ordinary Differential Equations.
New York, Springer-Verlag, 1974.

RECENT ACQUISITIONS Cont'd.

Wessel, M.R.
Freedom's Edge. The Computer
Threat to Society.
Reading, Mass., Addison-Wesley, 1974.

NEW EXECUTOR

A new version of EXECUTOR was tested and installed the last week of October. It includes WATERLOO University modifications to the original EXECUTOR. While being transparent to users, the modifications will insure increased throughput and improved usage of system resources.

Several features which were not supported in the original EXECUTOR are now supported. They are as follows:

1. JOB condition code and STEP even/only handling
2. DCB=Dsname
3. Unit=AFF
4. Unit=SEP

The following restrictions are still in effect:

1. Non-HASP SYSOUT classes are not supported (i.e. Gould plotter jobs; Calcomp jobs will be requeued).
2. Generation datasets or groups are not supported.
3. Temporary ISAM datasets are not supported.
4. A dataset may not be catalogued in one step and referenced in a following step. It must be catalogued in a previous job.
5. CATLG/UNCATLG, DISP=(NEW,KEEP) or DISP=(OLD,DELETE) are not supported.
6. Scratch files are not dynamically created. EXECUTOR has a pool of work datasets (40 datasets of 50 tracks each). All requests for work datasets are served from this pool. Since work datasets cannot be dynamically generated, secondary allocation is effectively ignored. For clarification on this point, please call Herb Kugel at 928-7286 or Dave Hart at 928-6281.
7. Maximum number of Jobsteps per job is 32.
8. Multi-volume datasets may reside on a maximum of 5 volumes.
9. Only DASD and HASP pseudo files may be processed.
10. The Checkpoint/Restart facility is not supported.
11. Offline DASD volumes may not be mounted under EXECUTOR.
12. The maximum number of directory blocks provided is one (1) track.

David Hart
Herb Kugel

ATTENTION ONLINE DATASET USERS

During the past few weeks UTCC has been moving online datasets between 3330 volumes. The purpose of these moves is to free-up more disk space for users by limiting the UTCC usage of online space.

cont'd...

ONLINE DATASETS USERS Cont'd.

As a result of these changes, online 3330 disks are now separated into two distinct groups. The first group is reserved for user datasets while UTCC datasets are now restricted to the second group.

Although this change is transparent to users, the following should be noted:

- Effective October 7, 1975 any new datasets allocated by a user were automatically allocated to the pool of disks reserved for users.
- Effective October 20, 1975, any user datasets which still resided in the pool of disks reserved for UTCC datasets were moved to the user pool by UTCC.

When the move is completed, a new version of the Online Dataset Monitor will be installed and this program will scratch any dataset which is illegally allocated in the incorrect pool.

Users with questions or problems regarding this change should contact the Computing Co-ordinators or a member of the Assurance Group at 928-7179.

Stan Yagi

FORTRAN REREAD AVAILABLE

UTCC is currently testing and evaluating SETB99, the University of Chicago Computing Centre's FORTRAN dummy READ and WRITE routines. These routines were contributed by a user and allow the programmer to use READ and WRITE statements to transfer data between a dummy buffer and program variables with appropriate internal format conversion.

Dummy reading allows for the reading of the same record several times with different format specifications. Not only can this be useful in treating the same data in more than one way upon input, but it can also be used as a 'look ahead' allowing the programmer, for example, to check for non-numeric characters before attempting data conversion.

Users who are interested in obtaining draft initial documentation should contact Herb Kugel at 928-7286.

Herb Kugel

TSO TOPICS -- ISUGGEST AND QED

ISUGGEST

Last month's COMPUTERNEWS featured an article describing the use of the ISUGGEST utility for submitting suggestions. It is possible, however, to submit suggestions directly with the ISUGGEST command rather than by submitting a batch job. One need only type ISUGGEST. When the message ENTER SUGGESTIONS is displayed, the user types his suggestions. When finished, the user enters a null line. As with suggestions from Batch and HSJS, all suggestions from TSO will be answered.

cont'd...

TSO TOPICS Cont'd.

QED

UTCC has available the QED text editor from Bell Labs. QED is a fast text editor, formerly available under Honeywell GCOS and other operating systems. TSO-QED, which is still being evaluated, offers faster performance and greater flexibility than the standard TSO editor. In addition, it provides entered data with protection against system failures and line disconnects.

Preliminary information on using QED can be obtained by contacting Ian Darwin at 49 St. George St. Room 303, or by entering HELP QED. Please note that under the terms of UTCC's contract with Bell Laboratories, QED is not available to commercial or other outside users.

Ian Darwin

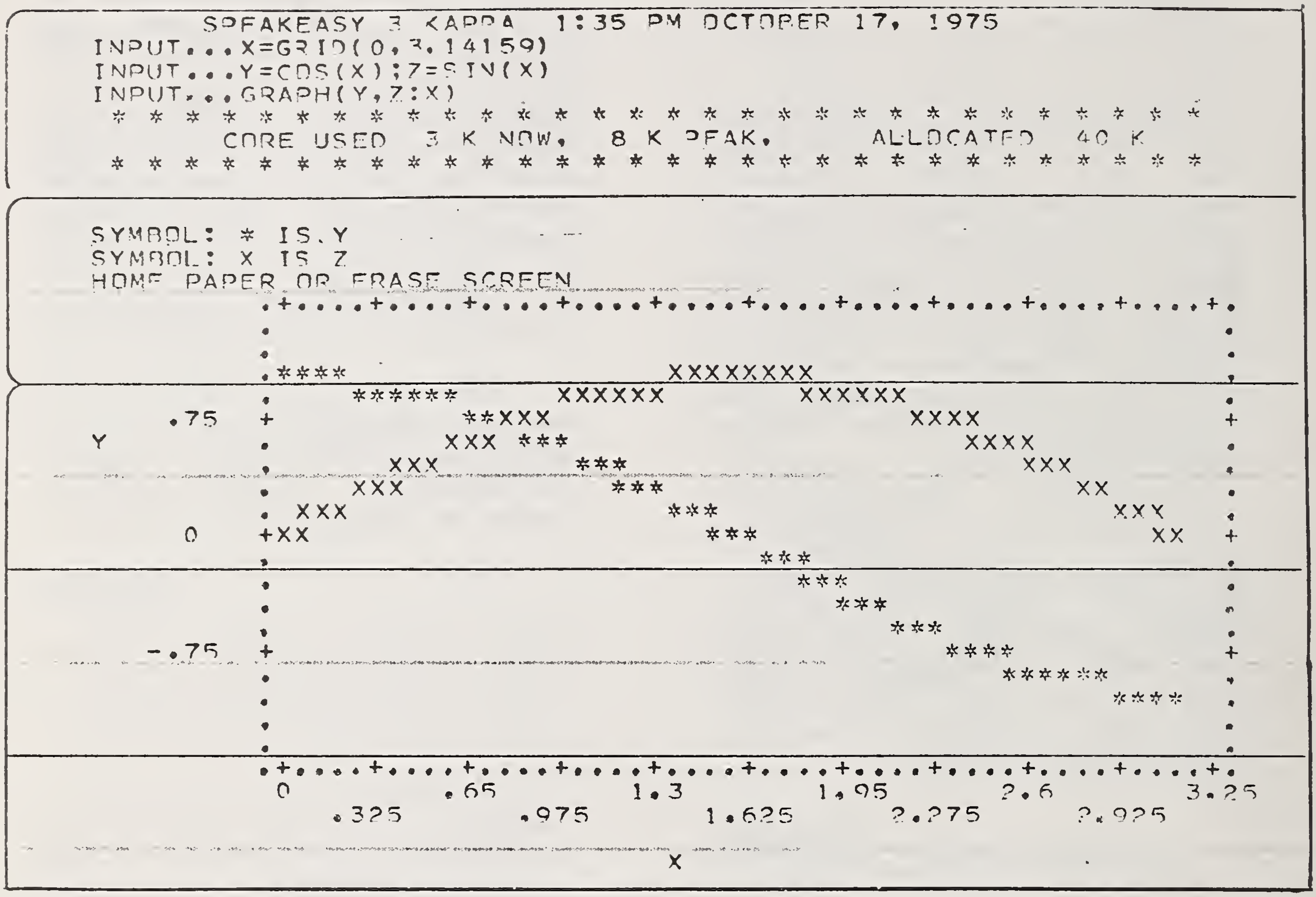
SPEAKEASY SESSIONS -- GRAPHICS FOR EVERYONE

UTCC has recently acquired the FEDEASY extensions to SPEAKEASY. These extensons relate primarily to time series analysis. Users who are interested in this field are invited to contact Ian Darwin at the address given below.

One item of general interest to users is a page plot routine which has been installed as the GRAPH word. With this routine, if no graphics package i.e. TEKTRONICS, CALCOMP or GOULD is initialized, calls to GRAPH will automatically invoke the page plot version. Since this program does not require any special graphics device, it may be used either on TSO or in Batch. A sample run is shown below.

Users who are interested in any aspect of SPEAKEASY should refer to USERBOOK 3.3SPEAKEASY or contact Ian Darwin at 928-7318, 49 St. George St., Room 303.

Ian Darwin



```
      SPEAKEASY 3 KAPPA  1:35 PM OCTOBER 17, 1975
INPUT...X=GRID(0,3.14159)
INPUT...Y=COS(X);Z=SIN(X)
INPUT...GRAPH(Y,Z:X)
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
       CORE USED  3 K NOW,   8 K PEAK.     ALLOCATED  40 K
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

SYMBOL: * IS Y
SYMBOL: X IS Z
HOME PAPER OR ERASE SCREEN
         .+....+....+....+....+....+....+....+....+....+....+.
         .                                                   .
         .                                                   .
         .****                 XXXXXXXX                      .
         .    ******     XXXXXX       XXXXXX                 .
    .75  +          **XXXX                  XXXX             +
Y        .         XXX ***                     XXXX          .
         .      XXX      ***                     XXX        .
         .    XXX          ***                      XX      .
         . XXX               ***                     XXX   .
     0   +XX                   ***                     XX  +
         .                          ***                      .
         .                            ***                    .
         .                              ***                  .
         .                                 ***               .
   -.75  +                                    ****           +
         .                                       ******      .
         .                                             ****  .
         .                                                   .
         .                                                   .
         .+....+....+....+....+....+....+....+....+....+....+.
          0        .65       1.3       1.95      2.6       3.25
             .325      .975      1.625     2.275     2.925
                               X
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OMR CARDS

Some researchers have discovered that the cost of preparing data for analysis frequently exceeds the cost of analysing the data. Data entered on non-standard forms in particular are expensive to keypunch directly from the forms (A recent survey consisting of 150 questions cost over $1.50 per respondent to keypunch). Users can frequently save money by discussing the survey layout with the Computing Co-ordinator before printing the final survey form. Other forms of input can be used. TSO, APL and ATS can be used for entering information after it has been coded. Unfortunately all of these methods have several serious drawbacks:

1. Data can be incorrectly coded.

2. There is a larger chance for error than if the data were entered directly.

3. The data entry costs can be much higher than the processing costs.

Another method of data entry called OMR (Optical Mark Recognition) can be used. In this case, the data can be entered on cards using an ordinary pencil. These cards will then be read by an OMR reader, translated by a program to 'keypunch' format and transferred to an online (or temporary) dataset for further processing. The same card can contain punched and penciled information.

How OMR Works

The OMR reader works by the principle of reflected light. Cards are composed of a shiny clay paper, holes (punched information) and bubbles (OMR information) which are 'read' by shining a series of lights at the card and measuring the reflected light. Normally the reader processes cards by reading the punched holes and interpreting columns with no punches in them as blank columns. If the OMR feature is turned on, then punched cards and OMR cards can be intermingled.

What an OMR Card Looks Like

Each OMR card contains a series of black marks before column 1 which essentially tell the card reader that the card is an OMR card. In addition, there are black timing marks along the bottom of the card which signal the start and end of an OMR field. (All columns before the first timing mark are interpreted as an ordinary punched card). The first timing mark that is encountered signals the start of an OMR field. The next timing mark signals the end of the OMR field and the beginning of the punched field. Similarly, the next timing mark will signal the start of the field and the following one the end. Thus, there are always an even number of timing marks on a card and an OMR card can contain both punched and OMR information.

What Do OMR Fields Look Like?

Each OMR field consists of one or more OMR columns, each OMR column is as wide as two columns of punched information and runs the

cont'd...

OMR CARDS Cont'd.

entire height of the card. The column contains at most, 12 bubbles arranged in two groups, 6 on the top half of the card and 6 on the bottom half. The bubbles are spaced evenly. Each bubble represents a bit. If the bubble is marked, the bit is on; if not, the bit is off. When the card is read, the top half and the bottom half of the column are each represented as the last 6 bits of an 8 bit byte, with the bits numbered in order (from top to bottom) 3-8 for each half. The first two bits are zeroes. The top half of the OMR column is stored in the odd column of the cards, the bottom half in the even column. The top half of each OMR column is read and stored in the byte before the byte corresponding to the bottom half.

Where is the OMR Reader?

There is only one OMR reader at UTCC, located in the Sandford Fleming Terminal, SF 112 and is the reader closest to the counter.

How do I Use It?

Ask the operator to turn on the OMR feature. The large green light on top of the reader will then go on indicating that the OMR feature is enabled. When you have finished, ask the operator to turn the OMR feature off.

Is the Reader Sensitive?

The reader works quite well. However, the card reader will not read marks made with red or blue ink and has difficulty reading bubbles which have been marked very heavily or erased very hard. The reader may also interpret a punched card as an OMR card and generate an OMR check. (To correct the problem follow the instructions for a validity check, completing a new card if necessary).

What OMR Cards Does UTCC Supply?

There are currently OMR cards for WATFIV and for MARKEXAM (both for the name and answer cards). For details on the MARKEXAM consult USERBOOK 3.5MARKEXAM. The MARKEXAM answer card could be used for a survey containing at most 450 questions each with at most five responses. A nine digit field can be used to code subject information.

What Other Cards Have Been Made?

UTCC has designed OMR cards to calculate the overtime for full time staff members and the part-time payroll for advisors and operators. The Faculty of Applied Science and Engineering has developed a card for course evaluations and for recording modular tests for a course.

Can I Design My Own Card?

Users who have cards which they wish to have designed, should contact Mark Tapia at 928-7109 or a Marketing Representative. UTCC will supply users with layout sheets and assistance, interface with the card manufacturer and handle the administrative details. The cost of producing the plates and printing the cards will be billed to the user. The cost is over $350 for the plates and there is a minimum order of 10,000 cards. Delivery time is between 6 and 8 weeks.

Mark Tapia

S/370-165-II RELIABILITY

The reliability statistics for September indicate an uptime percentage of 99.1 while the average number of IPL's per day reached 0.87. The number of scheduled hours of production for September totalled 456.

MONTHLY COMPARATIVE FIGURES

MONTH	% UPTIME	UNSCHED. IPLs/DAY
Sep/74	94.5	1.83
Oct/74	98.6	1.07
Nov/74	98.9	0.93
Dec/74	97.1	1.21
Jan/75	95.7	2.77
Feb/75	96.0	1.14
Mar/75	96.7	1.10
Apr/75	98.6	0.70
May/75	99.4	0.60
Jun/75	97.4	0.79
Jul/75	95.2	1.23
Aug/75	97.6	0.83
Sep/75	99.1	0.87

The percentage breakdown of total system downtime for September was:

Hardware: 160 minutes (67.2%)
Software: 50 minutes (21.0%)
Other : 28 minutes (11.8%)

The major events contributing to these downtime totals were as follows:

September 29 - 28 minutes down - 2 IPLs

a. 20 minutes attributed to atmospheric conditions which caused a power surge resulting in a thermal check on the 2848 and a power check on the 3705.

b. 8 minutes charged to an IGF013W machine check which caused an uncorrectable channel error.

September 30 - 100 minutes down - 1 IPL

a. All time due to PARALLEL ADDER checks in the /165 CPU which were causing 0F3 abends. IBM performed corrective maintenance, a number of cards were replaced and the problem was temporarily rectified. Additional maintenance was scheduled.

Paul Scarborough

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              DOWNTIME_REPORT_ON___S/370__FOR_SEP_75


-----------------------------------------------------------------------------------------------------------------------------
|                                                    REIPLS(SPEC) // DOWNTIME (MN)                                          |
| DAY  REIPL   DNTIME 0    5    10   15   20   25   30   35   40   45   50   55   60   65   70   75   80   85   90   95  100|
=======================+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+|
| M  1 (CENTER CLOSED) |                                                                                                    |
| T  2      1       5  |☐****                                                                                               |
| W  3      1       8  |☐*******                                                                                            |
| T  4      1       8  |☐*******                                                                                            |
| F  5      0       0  |                                                                                                    |
| S  6      0       0  |                                                                                                    |
| S  7      0       0  |                                                                                                    |
| M  8      1       6  |☐*****                                                                                              |
| T  9      3      17  |☐☐☐**************                                                                                   |
| W 10      1       9  |☐********                                                                                           |
| T 11      2      18  |☐☐****************                                                                                  |
| F 12      1       6  |☐*****                                                                                              |
| S 13      0       0  |                                                                                                    |
| S 14      0       0  |                                                                                                    |
| M 15      0       0  |                                                                                                    |
| T 16      0       0  |                                                                                                    |
| W 17      1      13  |☐************                                                                                       |
| T 18      0       0  |                                                                                                    |
| F 19      0       0  |                                                                                                    |
| S 20      0       0  |                                                                                                    |
| S 21      0       0  |                                                                                                    |
| M 22      0       0  |                                                                                                    |
| T 23      0       0  |                                                                                                    |
| W 24      0       0  |                                                                                                    |
| T 25      1      10  |☐*********                                                                                          |
| F 26      0       0  |                                                                                                    |
| S 27      0       0  |                                                                                                    |
| S 28      1      10  |☐*********                                                                                          |
| M 29      2      28  |☐☐**************************                                                                        |
| T 30      0     100  |**************************************************************************************************** 100|
-----------------------------------------------------------------------------------------------------------------------------


 LEGEND      : ONE ☐  =ONE REIPL
               ONE *  =ONE MINUTE OF DOWNTIME


                                STATISTICS


                             TOTAL SCHEDULED HOURS OF PRODUCTION :  456
                             TOTAL DOWNTIME (MN)  :  238 , AVG/DAY :   8.21 , AVG/PROD HOUR :   0.25
                             TOTAL REIPL'S        :   16 , AVG/DAY :   0.55
                             DOWNTIME RATE IS     :  0.87 PERCENT OF SCHEDULED PRODUCTION HOURS
```

HSJS MONTHLY STATISTICS

During the month of September, 1975, 122,215 jobs were processed compared with 98,095 jobs for the previous year, an increase of 24.58%.

The following charts summarize the HSJS activity for the month of September. The graph represents the average number of jobs processed during each half hour period of the day.

Mark Tapia

```
RESOURCE USAGE BY PROCESSOR

                              ||      TOTAL PER PROCESSOR        ||     AVERAGE PER USE      |
                              ||   CPU    |  #CARDS  |  #LINES   ||  CPU   |#CARDS |  #LINES |
PROCESSOR | #USES  %TOTAL||  (MIN)   |   READ   |  PRINTED  || (MIN)  | READ  | PRINTED |
-----------------------------------------------------------------------------------------
WATFIV    | 58689   (48) ||  638.57 |  8168279 |   9068654 || 0.008 |  136  |   152   |
OTHER*    | 28983   (24) ||  174.32 |   714749 |   1966527 || 0.004 |   24  |    64   |
PL/C      | 25103   (21) ||  383.35 |  1479611 |   3909391 || 0.012 |   56  |   152   |
UTILITY   |  5301   ( 4) ||   14.08 |   618325 |    828154 || 0.000 |  116  |   156   |
SPITBOL   |  1490   ( 1) ||   20.53 |   351551 |    374146 || 0.012 |  232  |   248   |
ASMG      |  1358   ( 1) ||   22.69 |   251809 |    251485 || 0.016 |  184  |   184   |
WATBOL    |   535   ( 0) ||    6.83 |   136687 |    148441 || 0.012 |  252  |   276   |
ALGOLW    |   406   ( 0) ||    7.52 |    79676 |    113882 || 0.016 |  196  |   280   |
SIMON     |   191   ( 0) ||    0.42 |     4463 |      8256 || 0.000 |   20  |    40   |
PLUTO     |    82   ( 0) ||    0.48 |     4847 |      7660 || 0.004 |   56  |    92   |
LISP      |    60   ( 0) ||    0.59 |     9607 |      9043 || 0.008 |  160  |   148   |
ASSIST    |    17   ( 0) ||    0.11 |     1139 |      2511 || 0.004 |   64  |   144   |
-----------------------------------------------------------------------------------------
TOTAL       122215         || 1269.49 | 11820743 |  16688150 || 0.010 |   96  |   136   |

 *  SP/K, SPSSQ and SNAP
```

```
ALL TERMINALS                                          JOB VOLUME FOR 01/09/75 - 30/09/75
CLASS = W                                                  (AVERAGE OVER 30 DAYS)

                                                   # JOBS WHICH BEGAN EXECUTION AT INDICATED TIME
                                 25   50   75  100  125  150  175  200  225  250  275  300  325  350  375  400  425  450  475  500
                    |#JOBS|TOD|----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                    |    6|   |6
PROCESSOR #USES  %  |   11|   |66
WATFIV   58689 (48) |   13|  1|66
OTHER*   28983 (23) |   18|   |666
PL/C     25103 (20) |   16|  2|666
UTILITY   5301 ( 4) |   14|   |66
SPITBOL   1490 ( 1) |   14|  3|66
ASMG      1358 ( 1) |   11|   |66
WATBOL     535 ( 0) |    9|  4|6
ALGOLW     406 ( 0) |    9|   |6
SIMON      191 ( 0) |    5|  5|6
PLUTO       82 ( 0) |    4|   |
LISP        60 ( 0) |    3|  6|
OTHER        0 ( 0) |    1|   |
                    |    0|  7|
                    |    1|   |
                    |   27|  8|66666
                    |   77|   |666666666666666
                    |   72|  9|66666666666666
                    |  102|   |66666666666666666666
                    |  116| 10|66666666666666666666666
                    |  121|   |666666666666666666666666
                    |  170| 11|6666666666666666666666666666666666
                    |  196|   |666666666666666666666666666666666666666
                    |  160| 12|66666666666666666666666666666666
                    |  172|   |6666666666666666666666666666666666
                    |  184| 13|666666666666666666666666666666666666
                    |  204|   |6666666666666666666666666666666666666666
                    |  208| 14|66666666666666666666666666666666666666666
                    |  206|   |66666666666666666666666666666666666666666
                    |  208| 15|66666666666666666666666666666666666666666
                    |  208|   |66666666666666666666666666666666666666666
                    |  199| 16|666666666666666666666666666666666666666
                    |  187|   |6666666666666666666666666666666666666
                    |  177| 17|66666666666666666666666666666666666
                    |  145|   |66666666666666666666666666666
                    |  101| 18|66666666666666666666
                    |   92|   |666666666666666666
                    |   87| 19|66666666666666666
                    |   94|   |666666666666666666
                    |   98| 20|6666666666666666666
                    |   91|   |666666666666666666
                    |   97| 21|6666666666666666666
                    |   84|   |6666666666666666
SHIFT   #JOBS       |   20| 22|6666
0 - 8    4199       |    8|   |6
8 - 4   73162       |    3| 23|
4 - 12  44854       |    3|   |
                     4073|   | 8-SERVICE FACTOR(2.0) || 6-SERVICE FACTOR(1.0) || 4-SERVICE FACTOR(.75)

TOTAL JOBS AT SP .75 (UNAVERAGED)      0     * SP/K, SPSSO and SNAP
TOTAL JOBS AT SP 1.0 (UNAVERAGED) 122215
TOTAL JOBS AT SP 2.0 (UNAVERAGED)      0
TOTAL JOBS AT ALL SP (UNAVERAGED) 122215
```

INTERACTIVE SYSTEMS RELIABILITY

The uptimes achieved for the month of September for each of APL and ATS were 96.81% and 96.79% of scheduled operation, respectively. The number of scheduled hours of operation during the month of September totalled 467, while the number of unscheduled IPL's per day was 0.21. In addition to the scheduled time, Interactive Services were also available for approximately 107 hours of unattended weekend operation.

The percentage breakdown of total system downtime for September was: Hardware - 770 minutes (89.02%); Software - 11 minutes (1.27%); Other - 84 minutes (9.71%). Six unscheduled IPL's were required as a result of the failures. The major events contributing to downtime were as follows:

Sept. 2 - 3: Problems related to local storage in the multiplexor channel were resolved by replacing an array and board. However, the channel kept dropping bits in the control register. Eventually the problem was isolated and the defective cards were replaced.

Sept. 15 - 16: APL and ATS control terminals were locked and there was no response from any teleprocessing lines. The intermittent problem appeared to be in the communications controller. This was overcome by replacing a card in the 3705 which controls tag and I/O operations.

Sept. 29: A combination of hardware problems with the disk control unit and 3705, along with some operational oversights resulted in an inordinate amount of downtime.

The following table summarizes the time lost out of scheduled hours of production due to system failures for each of the systems.

Kam Jain

DATE	DOWNTIME (mins)		REASON
	APL	ATS	
Tue. Sept. 2	440	440	Local storage problem multiplexor channel (hardware)
Wed. Sept. 3	270	270	"
Mon. Sept. 15	16	18	*APL abended - U1000 (hardware)
Tue. Sept. 16	17	25	*Control terminals locked (hardware)
Fri. Sept. 19	11	-	Late due to APL file retrieve
Sun. Sept. 21	16	-	Tape drive problem during APL file retrieve
Mon. Sept. 22	-	16	Late due to ROLLIN
Wed. Sept. 24	11	12	*Solid system on Test I/O loop (software)
Sun. Sept. 28	26	32	**Power fluctuation and I/O error on SYSRES
Mon. Sept. 29	85	86	*Hardware problems with disk control unit, 3705 and operational oversights.
Total	895	899	*IPL Required

System Failures September 1 - September 30, 1975

ATTENTION APL SV USERS

A 2741 terminal hardwired to APL SV is now available for users in the public terminal area in room 120A, Sandford Fleming Building.

Jerry Novak

DIALOGUE: DATATALK DOES SOME I WONDERS....

Have you ever wondered how many acres your garden is? How high your house is? The day you were born?

Take a moment to find out! Call us at the University of Toronto DATATALK, 928-6710, between 10 a.m. - 10 p.m. on any weekday.

DATATALK: Good morning, DATATALK services....
C: Hi...ahm...I've been wondering exactly how large my garden is? My wife says that it couldn't be more than a quarter acre, but I think...that is...having worked it all summer, it feels like a lot more...
D: Hm...
C: I measured the boundary...
C: It's 53.37 by 110.69 by 52.5 by 103.98 feet. What's the area?
D: I don't know...that's not enough information to determine it's shape...
C: Oh?
D: Yes. Suppose you had a hinge at each corner...?
C: Oh!! I see, I need to know at least two of the angles don't I?
C: I'll call you back tomorrow...

....

D: Good morning, DATATALK services...
C: Hi, I called you yesterday, you know the garden problem?
D: Oh yes...
C: Well, one side is 110.69 feet and the two angles are, on the right, 90 degrees, 5 minutes and on the left, 82 degrees, 40 minutes. Also, the right hand side is 52.5 feet and the left hand side is 53.37 feet. The back measures 103.98 feet. Ok???

D: Just a minute while I try to sort out all this information..
D: Alright, the area is 5658.41 square feet and did you know that that's only 0.1299 acres?
C: Are you sure???
D: Yes. For example, I can compute the length of the opposite side, which I didn't really have to know in order to describe your garden...it's 103.96 feet. Your measurements are really quite excellent.,,
C: Yes. But my sense of area less so...Thank you very much. Bye.

....

cont'd...

DIALOGUES Cont'd.

D: Good morning, DATATALK services...
C: Hi. I was born on February the 12th, 1947...was that a Thursday?
D: No...as a matter of fact, it was a Wednesday.
C: Oh? and my father, on May the 5th, 1920?
D: Also a Wednesday!!
C: Oh?? and my grandfather.....

....

D: Good morning, DATATALK services...
C: Hi there! The distance from the back of my house to the back of my lot is about 150 feet. I'm wondering...can you estimate the height of my house for me?
D: Well...I need to know something more. For example, the angle...
C: Oh! Of course! Ah, I noticed that the top cable obscured the sun and it was about 6 p.m....maybe 5:30 p.m....
D: Suppose we say that the angle is between 12 and 15 degrees...?
C: Good, I'd say that's about right.
D: The height of your house is between...

Ernst Goetze

UTCC COMPUTER EQUIPMENT

SYSTEM/370 MODEL 165-II

- located in SF103/105/112
- provides General Purpose Job Stream, High Speed Job Stream, APL SV and TSO services
- 3072K bytes of memory
- 1 drum (2301)
- 13 disk drives (3330)
- 8 disk drives (2314)
- 7 magnetic tape drives (5 9-track and 2 7-track)
- 6 display consoles
- 6 printers
- 5 card readers
- 1 card punch
- 8 remote batch terminals
- 1 paper tape reader
- Calcomp plotters (11" and 30")
- Gould plotter (11")
- OS/MVT with HASP

SYSTEM/360 MODEL 65

- located in McLennan Physical Laboratories
- provides APL and ATS services
- 1536K bytes of core
- 24 disk drives (2314)
- 3 9-track magnetic tape drives
- 1 printer
- 1 card reader
- 1 card punch
- 140 typewriter terminals
- OS/MVT with APL and ATS

7094 II

- located in Room 1203 Burton Tower
- 32K words of core
- 1 disk
- 8 magnetic tape drives
- input/output via a 1401 computer

COMPUTER RESEARCH FACILITY

- located in SF207
- DEC GT44 Systems with
  - 1 PDP-11/40 CPU
  - 2 9-track dual density tape drives
  - 1 1000 cpm card reader
  - VT17 graphics display unit
  - 1 lab. peripheral system with A/D & D/A
  - 1 CVI 260 Video Bandwidth Compressor
- DEC GT40 System with
  - 1 PDP-11/10 CPU
  - 1 2314 tape disk drive
  - 1 VT12 graphic display unit
  - 9-track/800 BPI tape drive
  - 1 Calcomp microfilm plotter

UTCC DIRECTORY

	ROOM	PHONE 928-
DIRECTOR		
John C. Wilson	SF143	6496
ASSOCIATE DIRECTOR		
Al Heyworth	SF116	4936
ADMINISTRATION MANAGER		
Anthony Pieterse	SF137	8948
INFORMATION OFFICE		
General Inquiries	SF128	4990 or 4991
Don Gibson	SF128A	
MANAGER, SERVICES		
Stan Yagi	SG200	7331
SUPERVISOR, MARKETING SERVICES		
Dave Scobie	SG201	6877
TERMINAL CO-ORDINATORS		
Sandford Fleming Terminal		
Mark Tapia	SF125	7109
Program Advisors	SF117	8599
Erindale		
Vaughan Lawrason		828-5311
Scarborough		
Ralph Lombardi		284-3173
Arts and Science		
Marlene Domoney	SS2104	6509
Management Studies		
Paul Roth		4917
SUPERVISOR, APPLICATIONS SUPPORT		
Herb Kugel	SG304	7286
MANAGER, OPERATIONS		
Derry Cox	SF113	7092
MANAGER, SYSTEMS		
Rein Mikkor	SF113	5058
SYSTEM HARDWARE SUPERVISOR		
Eugene Siciunas	SF113	4967
SUPERVISOR, 7094 SERVICES		
William Beasley	NP1207	7094
MANAGER, COMPUTER RESEARCH FACILITY		
Dennis Smith	SF214B	4800
LAB CO-ORDINATOR (CRF)		
Krishna Patnaik	SF207	8858
CONTRACT PROGRAMMING		
Dave Scobie	SG201	6877
ACCOUNTS		
Ann DeFazio	SF139	7148
Wynona Bardgett	SF139	8702
ACCESS CODES		
Yvonne Bowen	SF139	8703
ASSISTANT MANAGER, INFORMATION SYSTEMS TERMINAL		
George Milo		5040

NOTE:

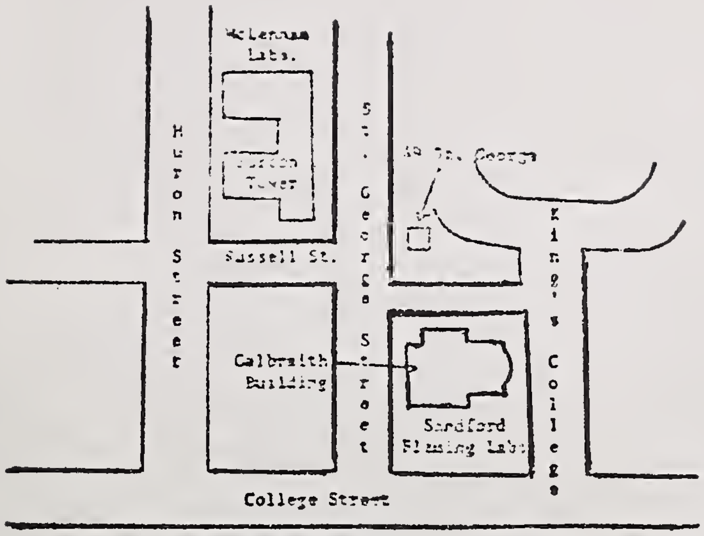
SF = Sandford Fleming
SG = 49 St. George
NP = McLennan Physical (New Physics)
SS = Sydney Smith

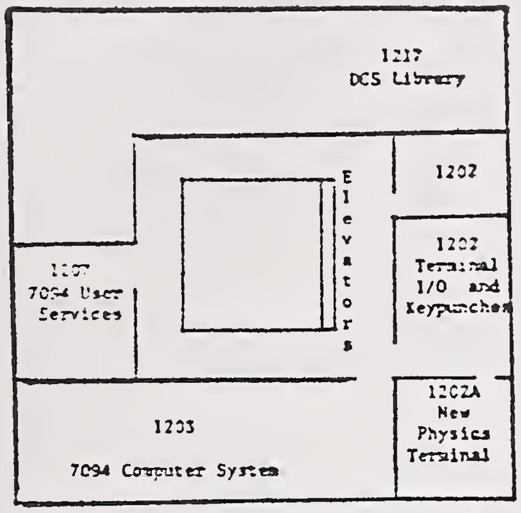
JOB AND SYSTEM STATUS QUERIES

SYSTEM/370, TSO	7373
ATS/APL	6234
7094	7094
2741 TERMINAL MALFUNCTIONS	7107
029 KEYPUNCH MALFUNCTIONS	6465

SERVICES

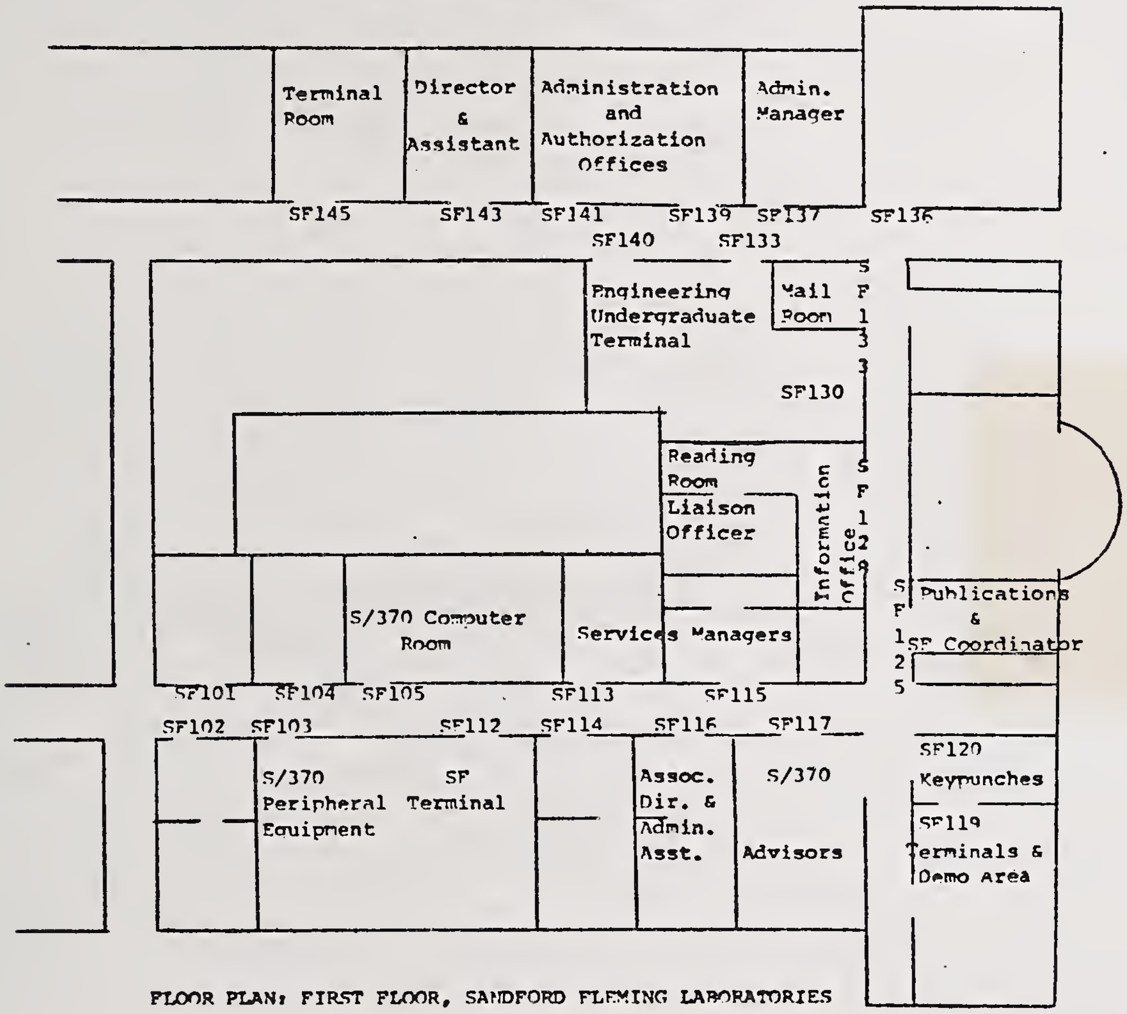
	DIAL-UP	ADVICE
APL - 2741	7200	6710
APL(ASCII)	7200	7107
APL SV - 2741	7239	6710
APL SV - TTY	7447	6710
ATS	7100	7107
TSO - 2741	7303	8599
TSO - TTY (10 cps)	7390	8599
TSO - TTY (30 cps)	7386	8599
DATATALK	6710	6710



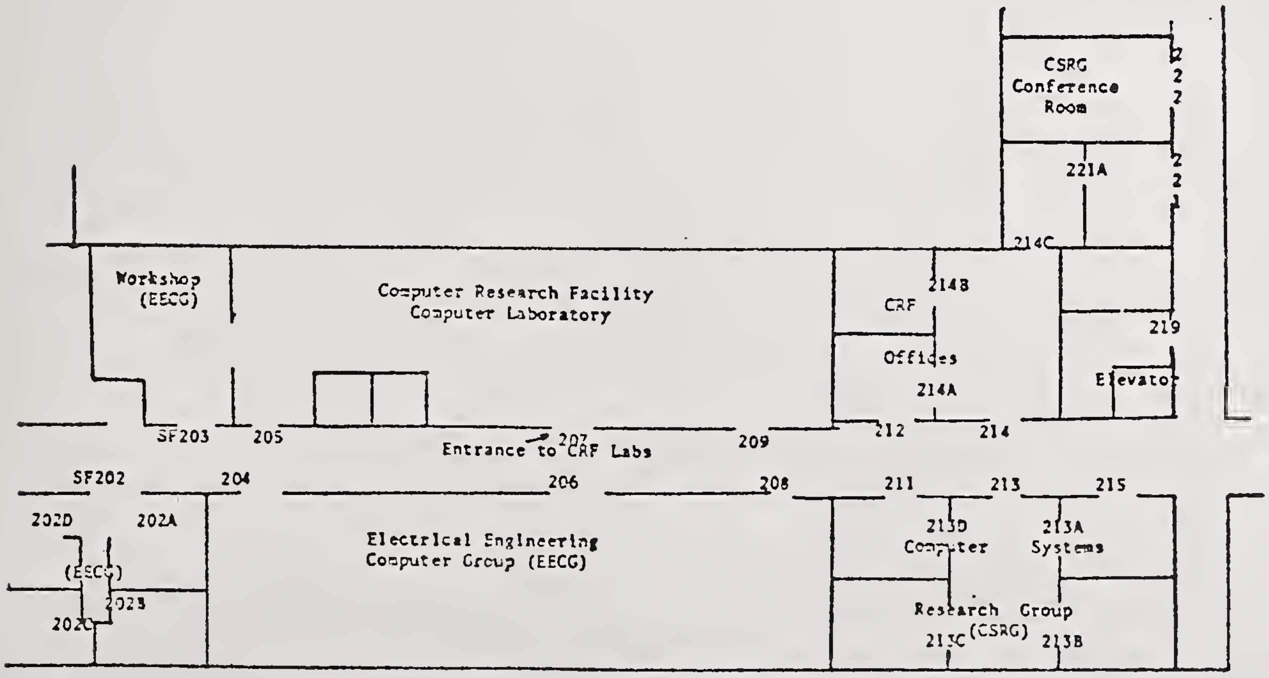

1217 DCS Library
1202
1202 Terminal I/O and Keypunches
1207 7094 User Services
Elevators
1203 7094 Computer System
1202A New Physics Terminal

FLOOR PLAN: TWELFTH FLOOR, BURTON TOWER

UNIVERSITY OF TORONTO COMPUTER CENTRE



FLOOR PLAN: FIRST FLOOR, SANDFORD FLEMING LABORATORIES



FLOOR PLAN: SECOND FLOOR, SANDFORD FLEMING LABORATORIES

DR.J.C.WILSON
DIRECTOR
U T C C
SANDFORD FLEMING BLDG.
ROOM 143
UNIVERSITY OF TORONTO

CAMPUS DELIVERY

UNIVERSITY OF TORONTO
COMPUTER CENTRE,
TORONTO, CANADA.